

**volume 64, contents and author index**

**solid  
state  
communications**

**an international journal**



**Pergamon Press**

**Oxford · New York**

**Beijing · Frankfurt · São Paulo · Sydney · Tokyo · Toronto**

## EDITORIAL POLICY COMMITTEE

P. AIGRAIN, *Chairman*

P. G. DE GENNES

J. A. KRUMHANS

W. M. LOMER

S. LUNDQVIST

Y. TOYOZAWA

## BOARD OF EDITORS

V. M. AGRANOVICH, *Moscow*S. ALEXANDER, *Jerusalem*S. AMELINCKX, *Mol-Denk*M. BALKANSKI, *Paris*I. BALSLEV, *Odense*R. BARRIE, *Vancouver*E. F. BERTAUT, *Grenoble*G. BURNS, *New York*

(Deputy Editor-in-Chief)

M. CARDONA, *Stuttgart*

(Associate Editor-in-Chief)

M. F. COLLINS, *Hamilton*R. A. COWLEY, *Edinburgh*P. H. DEDERICH, *Jülich*R. FIESCHI, *Parma*L. HEDIN, *Lund*J. JOFFRIN, *Paris*H. KAMIMURA, *Tokyo*J. KANAMORI, *Osaka*L. V. KELDYSH, *Moscow*W. Y. KUAN, *Beijing*R. C. C. LEITE, *Campinas*O. V. LOUNASMAA, *Helsinki*A. A. MARADUDIN, *Irvine*C. W. McCOMBIE, *Reading*B. MÜHLSCHLEGEL, *Köln*F. R. N. NABARRO, *Johannesburg*J. M. ROWELL, *Red Bank*W. SASAKI, *Tokyo*R. H. SILSBEE, *Ithaca*H. SUHL, *La Jolla*J. TAUC, *Providence*E. TOSATTI and M. P. TOSI, *Trieste*T. TSUZUKI, *Sendai*A. R. VERMA, *New Delhi*P. WACHTER, *Zürich*A. ZAWADOWSKI, *Budapest*G. S. ZHDANOV, *Moscow*

Institute of Spectroscopy of the Academy of Sciences, U.S.S.R. Akademgorodok, Podolski r-n, Moscow obl. 142092, U.S.S.R.

Hebrew University, Jerusalem, Israel

Solid State Physics Department, S.C.K.-C.E.N., Boeretang 200, B-2400 Mol, Belgium  
Laboratoire de Physique des Solides, Université Pierre et Marie Curie, 4, Place Jussieu,  
Tour 13-2e Etage, 75230 Paris Cedex 05, France

Fysisk Institut, Odense Universitet, DK-5230 Odense M, Denmark

Department of Physics, University of British Columbia, Vancouver 8, British  
Columbia, Canada V6T 1W5Laboratoire des Rayons X, B.P. No. 166—Centre de Tri 38042, Grenoble, Cedex,  
FranceI.B.M., T. J. Watson Research Center, P.O. Box 218, Yorktown Heights, New York  
10598, U.S.A.Max-Planck-Institut für Festkörperforschung, Heisenbergstrasse 1, 7000 Stuttgart 80,  
Federal Republic of Germany

Department of Physics, McMaster University, Hamilton, Ontario, Canada L8S 4M1

Department of Physics, University of Edinburgh, Kings Buildings, Mayfield Road,  
Edinburgh EH9 3JZ, ScotlandInstitut für Festkörperforschung der Kernforschungsanlage Jülich GmbH, 5170 Jülich  
1— Postfach 1913, Federal Republic of Germany

Istituto di Fisica, Università degli Studi, 43100 Parma, Italy

Department of Theoretical Physics, University of Lund, Sölvegatan 14A, S-223 62  
Lund, Sweden

Université Paris-Sud, Batiment 510, 91405 Orsay, France

Department of Physics, Faculty of Science, University of Tokyo, Bunkyo-ku, Toky  
113, JapanFaculty of Science, Osaka University, Machikane-Yama, Toyonaka, Osaka 560, Japan  
P. N. Lebedev Institute, Academy of Sciences of the U.S.S.R. Leningrad Prospect 53,  
117924 Moscow, U.S.S.R.Institute of Physics, Chinese Academy of Sciences, Beijing, People's Republic of China  
Instituto de Fisica, Caixa Postal 6128, 13 100 Campinas, S.P., BrazilLow Temperature Laboratory, Helsinki University of Technology, SF-02150 Espoo 15,  
Finland

Department of Physics, University of California, Irvine, California 92717, U.S.A.

University of Reading, Physics Department, J.J. Thomson Physical Laboratory, White  
Knights, P.O. Box 220, Reading RG6 2AF, Berkshire, EnglandInstitut für Theoretische Physik, Universität zu Köln, Zulpicher Str. 77, D-5000 Köln  
41, Federal Republic of GermanyDepartment of Physics, University of the Witwatersrand, Jan Smuts Avenue, 2001  
Johannesburg, South AfricaBell Communications Research, Inc., 3Z-357, 331, Newman Springs Road, Red Bank,  
NJ 07701, U.S.A.Department of Physics, Toho University, Miyama 2-2-1, Funabashi 274, Japan  
Laboratory of Atomic and Solid State Physics, Cornell University, Ithaca, New York  
14853, U.S.A.Department of Physics, B-019, University of California at San Diego, La Jolla,  
California 92093, U.S.A.Box D, Division of Engineering, Brown University, Providence, Rhode Island 02912,  
U.S.A.International Centre for Theoretical Physics, P.O. Box 586, Miramare, 34100 Trieste,  
ItalyDepartment of Physics, Tohoku University, Aramaki, Aoba, Sendai, 980, Japan  
National Physical Laboratory, Hillside Road, New Delhi-110012, IndiaLaboratorium für Festkörperphysik der ETH, CH-8093 Zürich, Hönggerberg,  
SwitzerlandCentral Research Institute for Physics, Budapest 114, P.O.B. 49, Hungary  
Department of Physics, Moscow State University, 117234 Moscow B-234, U.S.S.R.

## PRODUCTION CONTROLLER

M. R. JAKEMAN, Production Department, Pergamon Press plc, Headington Hill Hall, Oxford OX3 0BW, U.K.

SOLID STATE COMMUNICATIONS is a companion journal to THE JOURNAL OF PHYSICS AND  
CHEMISTRY OF SOLIDS.Publishing and Advertising Offices: Pergamon Press Inc., Maxwell House, Fairview Park, Elmsford, NY 10523, U.S.A.; Pergamon Press plc., Headington Hill Hall,  
Oxford OX3 0BW, England (Oxford 64881).Subscription enquiries from customers in North America should be sent to: Pergamon Press Inc., Maxwell House, Fairview Park, Elmsford, NY 10523, U.S.A. and for  
the remainder of the world to: Pergamon Press plc., Headington Hill Hall, Oxford OX3 0BW, England. Annual institutional subscription rate (1988) DM 2065.00  
(including postage and insurance). Two-year institutional rate (1988/1989) DM 3923.50. Personal subscription rate for those whose library subscribes at the regular rate  
(1988) DM 278.00. Prices are subject to change without notice.

Published: 48 issues per annum.

Microform Subscriptions and Back Issues: Back issues of all previously published volumes are available in the regular editions and on microfilm and microfiche. Current  
subscriptions are available on microfiche simultaneously with the paper edition and on microfilm on completion of the annual index at the end of the subscription year.

Copyright © 1988 Pergamon Press plc.

It is a condition of publication that manuscripts submitted to this journal have not been published and will not be simultaneously submitted or published elsewhere. By  
submitting a manuscript, the authors agree that the copyright for their article is transferred to the publisher if and when the article is accepted for publication. However,  
assignment of copyright is not required from authors who work for organisations which do not permit such assignment. The copyright covers the exclusive rights to  
reproduce and distribute the article, including reprints, photographic reproductions, microform or any other reproductions of similar nature and translations. No part of  
this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means: electronic, electrostatic, magnetic tape, mechanical,  
photocopying, recording or otherwise without permission in writing from the copyright holder.

## U.S. Copyright Law Applicable to Users in the U.S.A.

Photocopying information for users in the U.S.A. The Item-Fee Code for this publication indicates that authorization to photocopy items for internal or personal use is  
granted by the copyright holder for libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service provided the stated  
fee for copying, beyond that permitted by Section 107 or 108 of the United States Copyright Law, is paid. The appropriate remittance of \$3.00 per copy per article is paid  
directly to the Copyright Clearance Center Inc., 27 Congress Street, Salem, MA 01970.Permission for other use. The copyright owner's consent does not extend to copying for general distribution, for promotion, for creating new works, or for resale.  
Specific written permission must be obtained from the publisher for such copying.

The Item-Fee Code for this publication is: 0038-1098/88 \$3.00 + 0.00.

# CONTENTS

OCTOBER

VOLUME 64, NUMBER 1

1987

## CONTENTS

### General Papers

- |   |  |
|---|--|
| Duan Jian-zhong and Wu Zi-qin   | 1 Appearance of negative fractal-like structures in Pd-Si alloy films  |
| B. J. Pronk, H. B. Brom, A. Ceriotti and G. Longoni                                 | 7 Physical properties of metal cluster compounds III: NMR study of platinum carbonyl clusters  |
| D. W. Koon and T. G. Castner  | 11 Variable-range hopping and the Hall coefficient in Si:As  |
| C. Rincón   | 15 A model for the band gap shrinkage in the chalcopyrite semiconductor CuInSe <sub>2</sub>  |
| C. O. Rodriguez and K. Kunc   | 19 Ionic bonding and valence-charge density in lithium hydride   |
| A. Gupta, S. K. Agarwal, B. Jayaram, A. V. Narlikar, S. Ramakrishnan and G. Chandra | 23 Magnetoresistivity behaviour of heavy Fermion CeCu <sub>6</sub> system  |
| E. W. Fenton  | 27 Possible evidence for an incommensurate spin density wave in the Stanford electron tunnelling studies into LaSrCuO  |
| M. O. Henry, K. G. McGuigan and R. C. Barklie                                       | 31 Bound exciton recombination at Mn-Zn pair centres in silicon  |
| H. Kobori, T. Ohyama and E. Otsuka  | 35 Quantum limit cyclotron resonance in Ge acoustic deformation potential scattering   |
| H. Lock, R. A. Wind, G. E. Maciel and N. Zumbulyadis                                | 41 <sup>29</sup> Si dynamic nuclear polarization of dehydrogenated amorphous silicon   |
| A. Kobayashi, R. Kato, H. Kobayashi, T. Mori and H. Inokuchi                        | 45 The organic $\pi$ -electron metal system with interaction through mixed-valence metal cation: electronic and structural properties of radical salts of dicyano-quinodimethine, (DMe-DCNQI) <sub>2</sub> Cu and (MeCl-DCNQI) <sub>2</sub> Cu |
| R. Plumier and M. Sougi   | 53 Observation of a first order transition in the ferrimagnetic spinel MnV <sub>2</sub> O <sub>4</sub>   |
| B. Chenevier, J. L. Soubeyroux, M. Bacmann, D. Fruchart and R. Fruchart             | 57 The high temperature orthorhombic $\rightleftharpoons$ hexagonal phase transformation of FeMnP  |
| A. Twardowski, P. Glód, W. J. M. de Jonge and M. Demianiuk                          | 63 The study of s-d exchange interaction in ZnFeSe semimagnetic semiconductor  |

J. Ghanbaja, C. Goulon, J. F. Maréché and  
D. Billaud

69 EPR studies of binary alkali metal doped polyacetylene

### Superconductors and Superconductivity

G. A. Held, P. M. Horn, C. C. Tsuei,  
S. J. LaPlaca, J. G. Bednorz and K. A. Müller

A. Bezinge, J. L. Jorda, A. Junod and  
J. Müller

F. Zuo, B. R. Patton, T. W. Noh, S.-I. Lee,  
Y. Song, J. P. Golben, X.-D. Chen, S. Y. Lee,  
J. R. Gaines, J. C. Garland and A. J. Epstein

B. Fisher, E. Polturak, G. Koren, A. Kessel,  
R. Fischer and L. Harel

Karol I. Wysokiński

Sheng Yi, Sun Yin-long and Fu-sui Liu

75 X-ray scattering study of the temperature dependence of the  
structure of the high  $T_c$  superconductor  $\text{La}_{1-x}\text{Sr}_x\text{CuO}_4$

79 Magnetization of the extreme type II superconductor  
 $\text{YBa}_2\text{Cu}_3\text{O}_x$  with  $x > 100$

83 Magnetic behavior of the high  $T_c$  composite compound of  
 $\text{Y}_2\text{Ba}_2\text{Cu}_3\text{O}_{7-x}$  in the superconducting phase

87 The resistivity of  $\text{Y}_2\text{Ba}_2\text{Cu}_3\text{O}_x$  between 80 K and 1240 K

89 On the superconductivity in  $\text{La}-(\text{Ba}, \text{Sr}, \text{Ca})-\text{Cu}-\text{O}$   
systems

93 LO strong coupling superconductivity theory

### General Papers (contd.)

R. Merlin

Zhao Tiesong and Jin Hanmin

B. Oczkiewicz, A. Twardowski and  
M. Demianiuk

E. A. de Andrada e Silva and  
I. C. da Cunha Lima

R. Hrabanski

L. C. Davis and H. Holloway

K. Tanaka and H. Murayama

C. Sénémaud, F. Vergand, C. Bonnelle,  
O. Thomas, J. P. Sénateur and R. Madar

T. Osada, N. Miura, I. Oguro and G. Saito

R. Pirc, P. Prelovšek and B. Tadić

M. A. Tamor

E. Canessa, M. J. Grimson and M. Silbert

R. Caciuffo, G. H. Lander, J. C. Spirlet,  
J. M. Fournier and W. F. Kuhs

99 Subband-Landau-level coupling in tilted magnetic fields: exact  
results for parabolic wells

103 Magnetization process related to the singular point detection  
signal observed at high fields on  $\text{Pr}_2\text{Fe}_{14}\text{B}$  and  $\text{Nd}_2\text{Fe}_{14}\text{B}$

107 Intra-manganese absorption and luminescence in  $\text{Zn}_{1-x}\text{Mn}_x\text{Se}$   
semimagnetic semiconductor

113 Impurity bands in  $\text{Ga}_{1-x}\text{Al}_x\text{As}/\text{GaAs}$  quantum wells

117 EPR of  $\text{Mn}^{2+}$  in single crystals of  $[\text{Zn}(\text{H}_2\text{O})_6]\text{SnF}_6$  and  
 $[\text{Co}(\text{H}_2\text{O})_6]\text{SnF}_6$ ;  $\text{Co}^{2+}$  spin-lattice relaxation time

121 The effects of short-range and long-range order on the energy  
gaps of  $(\text{GaAs})_{1-x}\text{Ge}_x$  and  $(\text{GaSb})_{1-x}\text{Ge}_x$

125 Pressure effects on electronic structures of amorphous  
semiconductors

129 Experimental study of partial densities of states in  $\text{MoSi}_2$

133 Electric-field-dependence of the small-period oscillation of the  
magnetoresistance in  $(\text{TMTSF})_2\text{ClO}_4$

137 Zero-temperature transition in a classical transverse Ising spin  
glass

141 Transport and recombination via thermally activated random  
walks

145 Equilibrium and elastic properties of double Yukawa solids

149 A search for anharmonic effects in  $\text{NpO}_2$  at low temperature  
by neutron diffraction

- V. Drago and E. Baggio Saitovitch 153 Short range order in vapor quenched amorphous  $MnSn_{1-x}$  alloys using *in situ*  $^{119}Sn$  Mössbauer spectroscopy
- J. K. Rath and S. Radhakrishna 157 EPR studies of  $MoO_4^{2-}$  centres in ADP crystals
- J. George, T. I. Palson and K. S. Joseph 161 High mobility polycrystalline  $SnTe:Ge$  films
- V. B. Bobrov and S. A. Trigger 165 Theory of pseudopotential in the basis of completely orthogonalized plane waves
- i Instructions for authors on the preparation of camera-ready manuscripts for Solid State Communications*

OCTOBER

VOLUME 64, NUMBER 2

1987

## CONTENTS

## General Papers

- J. Langen, G. Jackel, W. Schlabit, M. Veit and D. Wohlleben 169 Lattice parameter and resistivity anomalies of  $CeRh_2B_2$
- P. Deniard, P. Chevalier, L. Trichet, Y. Chabre and J. Pannetier 175 Dependence of the physical properties of pure and lithium intercalated zirconium diselenide on the host lattice stoichiometry
- M. Underweiser, M. Maki, B. Alavi and G. Grüner 181 Impurity pinning studies in  $Nb_{1-x}Ta_xSe_3$  alloys
- A. Borodziuk-Kulpa, B. Nysten, M. Lambricht and J-P. Issi 185 Weak-localization and interaction effects in thin vanadium films
- J. M. Sanz and C. Palacio 189  $N_{2s}$ -core losses and autoionization emissions of clean and oxygen exposed zirconium
- G. Kalkowski, G. Kaindl, S. Bertram, G. Schmiester, J. Rebizant, J. C. Spirlet and O. Vogt 193 5f localization in light actinide compounds studied by  $L_{1,2}$ -edge X-ray absorption
- R. W. Jansen and O. F. Sankey 197 Prediction of equilibrium defect concentrations in GaAs and ZnSe
- W. Brenig 203 Metamagnetism in heavy-fermion systems

## Superconductors and Superconductivity

- F. Li, Q. Li, G. Lu, K. Wu, Y. Zhou, C. Li and D. Yin 209 Specific heat studies of high- $T_c$  superconductor  $YBa_2Cu_3O_{7-x}$
- Chen Chang-feng, Xie Yuan-nan and Zhang Li-yuan 213 Josephson supercurrent in BCS superconductor-induced surface-layer heavy fermion superconductor junction
- E. A. Hayri, K. V. Ramanujachary, S. Li, M. Greenblatt, S. Simizu and S. A. Friedberg 217 Superconductivity in the  $Ln-Ba-Cu-O$  system ( $Ln = Y, Ho, Er$ )
- C. Allgeier, J. S. Schilling, H. C. Ku, P. Klavins and R. N. Shelton 227 The magnetic susceptibility of the high temperature superconductor  $La_{1.85}Sr_{0.15}CuO_4$  under hydrostatic pressure
- M.-H. Tsai, R. V. Kasowski and J. D. Dow 231 Relaxation of the non-polar (10 $\bar{1}0$ ) surfaces of wurtzite AlN and ZnS



- R. Escudero, T. Akachi, R. Barrio,  
L. E. Rendón-DíazMirón, C. Vázquez,  
L. Baños, G. González and F. Estrada
- H. Bakker, D. O. Welch and  
O. W. Lazareth, Jr
- S. B. Oseroff, D. C. Vier, J. F. Smyth,  
C. T. Salling, S. Schultz, Y. Dalichaouch,  
B. W. Lee, M. B. Maple, Z. Fisk,  
J. D. Thompson, J. L. Smith and E. Zirngiebl
- C. Ayache, B. Barbara, E. Bonjour,  
R. Calemczuk, M. Couach, J. H. Henry and  
J. Rossat-Mignod
- J. R. Cooper, L. W. Zhou, B. Dunn,  
C. T. Chu, B. Alavi and G. Grüner
- A. Brokman
- F. Gross, K. Andres and M. Weger
- H. Lütgemeier and M. W. Pieper
- 235 Measurements on the new high- $T_c$  superconductor  
Nd-Ba-Cu oxide system
- 237 Theory of the orthorhombic-tetragonal phase transition in  
 $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$
- 241 Electron paramagnetic resonance, electrical resistivity, and  
magnetization studies in the high  $T_c$  superconductors  
 $\text{EuBa}_2\text{Cu}_3\text{O}_{9-x}$  and  $\text{EuBa}_2(\text{Cu}_{1-x}\text{M}_x)\text{O}_{9-x}$  ( $\text{M} = \text{Cr}, \text{Mn}, \text{Fe},$   
 $\text{Co}, \text{Ni}, \text{or Zn}$ )
- 247 Thermal and magnetic properties of some  $\text{YBa}_2\text{Cu}_3\text{O}_{7-d}$   
samples
- 253 Traces of superconductivity in sintered  $\text{La}_2\text{CuO}_{4-y}$
- 257 Shear transformation and twin formation in  $\text{YBa}_2\text{Cu}_3\text{O}_7$
- 261 Superconductivity of  $\text{Hg}_{1-x}\text{AsF}_6$ : effect of annealing and  
anisotropy
- 267 NMR and NQR in the high  $T_c$  superconductors  
 $(\text{La}_{1-x}\text{Sr}_x)_2\text{CuO}_4$  and  $\text{Ba}_2\text{YCu}_3\text{O}_7$

---

**General Papers (contd.)**

- F. J. Berry, P. M. Gogarty and M. H. Loretto 273 Twin boundaries in antimony (V)-doped rutile titanium (IV)  
oxide
- i Erratum
- iii Instructions for authors on the preparation of camera-ready  
manuscripts for *Solid State Communications*

OCTOBER

VOLUME 64, NUMBER 3

1987

## CONTENTS

**General Papers**

- H. R. Rechenberg, M. Bogé, C. Jeandey,  
J. L. Oddou, J. P. Sanchez and P. Tenaud 277  $^{155}\text{Gd}$  and  $^{161}\text{Dy}$  Mössbauer study of  $\text{R}_{1-x}\text{Fe}_x\text{B}_4$  alloys ( $\text{R} = \text{Gd},$   
 $\text{Dy}$ )
- N. A. Cade, S. H. Parmar, N. R. Couch and  
M. J. Kelly 283 Indirect gap resonant tunnelling in GaAs/AlAs
- J. G. Booth, G. Srinivasan, C. E. Patton and  
C. M. Srivastava 287 Spin wave stiffness parameters in lithium-zinc ferrites
- Minoru Kumeda, Toyokazu Ohta and  
Tatsuo Shimizu 291 Dependence of the photoluminescence fatigue on the  
illumination temperature for a-Si:H

**Superconductors and Superconductivity**

- M. Čopič, D. Mihailović, M. Zgonik,  
M. Prester, K. Biljaković, B. Orel and  
N. Brničević 297 Raman and infrared study of lattice vibrations in the high- $T_c$   
ceramic superconductor  $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$

- A. W. Hewat, J. J. Capponi, C. Chaillout, M. Marezio and E. A. Hewat 301 Structures of superconducting  $\text{Ba}_2\text{YCu}_3\text{O}_{7-x}$  and semiconducting  $\text{Ba}_2\text{YCu}_3\text{O}_6$  between 25°C and 750°C
- H. Riesemeier, Ch. Grabow, E. W. Scheidt, V. Müller, K. Lüders and D. Riegel 309 NQR investigations of the high- $T_c$  superconductor  $\text{Ba}_2\text{YCu}_3\text{O}_7$
- E. Ortí, Ph. Lambin, J.-L. Brédas, J.-P. Vigneron, E. G. Derouane, A. A. Lucas and J.-M. André 313 Band structure of  $\text{YBa}_2\text{Cu}_3\text{O}_x$  in relation with the oxygen vacancy distribution
- W. Lai and P. N. Butcher 317 The effect of intra-molecular vibrations on the transition temperature of high  $T_c$  superconductors
- G. J. Cui, X. F. Meng, S. G. Wang, K. Shao, H. M. Jiang, Y. D. Dai, Y. Zhang, R. P. Peng, Z. L. Bao, F. R. Wang, S. Z. Wang, Z. Y. Ye, C. Y. Li, K. Wu and D. L. Yin 321 Josephson effects observed in constricted Y-Ba-Cu-O films at liquid nitrogen temperature
- Meng Xian-Ren, Ren Yan-Ru, Lin Ming-Zhu, Tu Qing-Yun, Lin Zhen-Jin, Sang Li-Hua, Ding Wei-Qing, Fu Min-Hua, Meng Qing-Yun, Li Chang-Jiang, Li Xiu-Hai, Qiu Guan-Liang and Chen Mou-Yuan 325 Zero resistance at 148.5 K in fluorine implanted Y-Ba-Cu-O compound
- V. Bayot, C. Dewitte, J.-P. Erauw, X. Gonze, M. Lambrecht and J.-P. Michenaud 327 Thermal expansion of a  $\text{YBa}_2\text{Cu}_3\text{O}_7$  superconducting ceramic
- A. C. Momin, M. D. Mathews, V. S. Jakkal, I. K. Gopalakrishnan, J. V. Yakhmi and R. M. Iyer 329 High temperature X-ray powder diffractometric studies of the superconducting compound  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$  from room temperature to 1300 K in air
- Takehiko Mori and Hiroo Inokuchi 335 Superconductivity in  $(\text{BEDT-TTF})_2\text{Cl}_2\text{H}_2\text{O}$
- K. H. Lii, M. F. Tai, H. C. Ku and S. L. Wang 339 High  $T_c$  superconductivity in  $\text{Y}_{1-x}\text{Ba}_x\text{Cu}_3\text{O}_{7-x}$
- 
- General Papers (contd.)**
- G. H. F. Brits and P. de V du Plessis 345 Critical behaviour near the incommensurate – commensurate phase transition in dysprosium
- Jagriti Singh and R. C. Budhani 349 Nitrogen doping in hydrogenated amorphous silicon
- M. Menon and R. E. Allen 353 Time-dependent chemisorption on a semiconductor surface
- D. J. Cookson, T. R. Finlayson and M. M. Elcombe 357 Phonon dispersion relations for potassium thiocyanate
- R. Gagnon, G. Bernier, S. Jandl and M. Aubin 361 Back reflection effect at the fundamental edge of semiconductors in modulated reflectivity measurements
- T. Shigenari, K. Abe, T. Shionoya, T. Haga and M. Sugiyama 367 Light scattering from  $E$ -symmetry amplitudon in the incommensurate phase of quartz
- S. Goel and A. Kumar 371 Anomalous rise of photocurrent in amorphous thin films of  $\text{Ge}_{22}\text{Se}_{78}$
- R. Koh, S. Hayashi and K. Yamamoto 375 Optimum surface roughness for surface enhanced Raman scattering
- T. G. Andersson, Z. G. Chen, V. D. Kulakovskii, A. Uddin and J. T. Vallin 379 Band edge offsets in strained  $(\text{InGa})\text{As} - (\text{AlGa})\text{As}$  heterostructures

N. B. Brookes, G. Thornton and F. M. Quinn 383 SrTiO<sub>3</sub> (100) step sites as catalytic centers for H<sub>2</sub>O dissociation

i Instructions for authors on the preparation of camera-ready manuscripts for *Solid State Communications*

OCTOBER

VOLUME 64, NUMBER 4

1987

## CONTENTS

## General Papers

- L. C. Porter, Hau H. Wang, M. A. Beno, K. D. Carlson, C. M. Pipan, R. B. Proksch and J. M. Williams 387 The X-ray crystal structure and physical properties of (BEDT-TTF)AuBr<sub>2</sub>Cl<sub>2</sub>
- N. Orita, T. Sasaki and K. Niizeki 391 Band structures and cohesive properties of high pressure phases of solid iodine
- M. Kurdi, A.-M. Marie and M. Danot 395 The crystallographic mechanism of the NbS<sub>3</sub> to Nb<sub>1.12</sub>S<sub>2</sub> transition
- B. Buffat and M. H. Tuilier 401 X-ray absorption edges of iron and cobalt with six-fold coordination in oxides: influence of site distortion and oxidation state
- M. Quintero, V. Sagredo, R. Tovar, P. Grima and G. S. Perez 407 Crystallographic and magnetic properties of the system (AgInCd)<sub>2</sub>(CuIn)<sub>2</sub>Mn<sub>4</sub>Te<sub>4</sub>(x + y + z = 1) with x = 3y
- P. Bogdanski, F. Murray and J. P. Piel 411 InP-SiO<sub>2</sub> metal-insulator-semiconductor structure parameters investigated with DLTS and other capacitance techniques
- P. Parilla, N. Carey and A. Zettl 417 Stress-dependent magnetoresistance in NbSe<sub>3</sub>
- K. Schwarz 421 Symmetry breaking in La<sub>2-x</sub>Ba<sub>x</sub>CuO<sub>4</sub>
- J. C. Lasjaunias, J. L. Tholence, C. Berger and D. Pavuna 425 On magnetic interactions in quasicrystalline Al<sub>88</sub>Mn<sub>14</sub> and Al<sub>75</sub>Mn<sub>20</sub>Si<sub>5</sub> alloys
- A. C. Redfield and J. D. Dow 431 Theory of Raman spectra of correlated substitutional alloys
- B. Villeret and M. Nechtschein 435 Growth of polyaniline films: evidence for fractal surface
- S. M. Wasim and A. Noguera 439 Thermal conductivity of CuGaTe<sub>2</sub>
- H. H. Huang, Y. B. Fan, S. A. Solin, J. M. Zhang, P. C. Eklund, J. Heremans and G. G. Tibbetts 443 A 2D metal-nonmetal transition in potassium-ammonia liquid monolayers in graphite
- J. I. Lee, B. B. Goldberg, M. Heiblum and P. J. Stiles 447 The frequency dependence of the diagonal conductivity of a 2DEG in GaAs heterostructure in the quantum Hall regime
- J. Vignolo, A. Ibarra and M. Jiménez de Castro 451 Effects of quenching on the thermoluminescence of MgO
- M. A. Ramos, S. Vieira and J. M. Calleja 455 Temperature dependence of the polarization of the dominant Raman lines in B<sub>2</sub>O<sub>3</sub> and (B<sub>2</sub>O<sub>3</sub>)<sub>0.84</sub>(Na<sub>2</sub>O)<sub>0.16</sub> glasses
- J. Wagner, M. Ramsteiner and R. C. Newman 459 Defect induced Raman transition in non-stoichiometric Ga-rich GaAs: a pseudolocalized vibrational mode of the Ga<sub>As</sub> antisite?



**Superconductors and Superconductivity**

- Ruan Yaoshong, Hu Xuelong, Zhao Yong, Qian Yitai, Chen Zuyao, Wang Ruiping and Zhang Qirui
- G. Burns, F. H. Dacol, P. Freitas, T. S. Plaskett and W. König
- A. Wittlin, R. Liu, M. Cardona, L. Genzel, W. König, W. Bauhofer, H. Mattausch, A. Simon and F. García-Alvarado
- Y. Okabe, Y. Suzumura, T. Sasaki and H. Katayama-Yoshida
- Duan Hong-min, Lu Li, Wang Xie-mei, Lin Shu-yuan and Zhang Dian-lin
- Zhao Yuechao, Zhang Shuyuan, Zhou Guien, Wu Ziqin, Chen Zuyao, Qian Yitai and Zhang Qirui
- C. C. Torardi, E. M. McCarron, P. E. Bierstedt, A. W. Sleight and D. E. Cox
- Y. Horie, Y. Terashi, H. Fukuda, T. Fukami and S. Mase
- J. A. Sanjurjo, E. López-Cruz, R. S. Katiyar, I. Torriani, C. Rettori, D. Davidov and I. Felner
- J. E. Drumheller, G. V. Rubenacker, W. K. Ford, J. Anderson, M. Hong, S. H. Liou, J. Kwo and C. T. Chen
- P. Strobel, J. J. Capponi, M. Marezio and P. Monod
- E. A. Hewat, M. Dupuy, A. Bourret, J. J. Capponi and M. Marezio
- H. Eschrig and G. Seifert
- A. de Visser, F. R. de Boer, A. A. Menovsky and J. J. M. Franse
- Zidan Wang, Nanzhi Zou, Jinzhong Pang and Changde Gong
- E. Czerwos, J. Bukowski, P. Przysłupski, J. Igalson, A. Pajczkowska and J. Raułuszkiewicz
- Shousheng Yan, Peixiang Lu, Hong Ma, Qiuping Jia and Xu Wang
- 467 Transport properties in single phase superconductor  $\text{Ba}_2\text{YCu}_3\text{O}_{9.4}$
- 471 Raman and infrared results on  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$  type materials
- 477 Temperature dependence of the Raman and infrared phonons of  $\text{MBa}_2\text{Cu}_3\text{O}_{7.4}$ -type superconductors
- 483 Enhancement of two-dimensional superconducting  $T_c$  by one-dimensional charge density wave instability — theory of the high  $T_c$  superconductor  $\text{Y}-\text{Ba}-\text{Cu}-\text{O}$
- 489 Hall effect of the high  $T_c$  superconducting  $\text{Y}-\text{Ba}-\text{Cu}-\text{O}$  compound
- 493 A TEM study of phases in the superconducting  $\text{Y}(\text{Yb})-\text{Ba}-\text{Cu}-\text{O}$  system
- 497 Topochemical reduction of the high temperature superconductor  $\text{YBa}_2\text{Cu}_3\text{O}_7$ ; the structure of  $\text{YBa}_2\text{Cu}_3\text{O}_6$  by neutron diffraction
- 501 Ultrasonic studies of the high  $T_c$  superconductor  $\text{Y}_2\text{Ba}_4\text{Cu}_6\text{O}_{14}$
- 505 Raman measurements and lattice dynamics in the high  $T_c$  superconductor  $\text{YBa}_2\text{Cu}_3\text{O}_7$
- 509 Low magnetic field superconducting phase diagram of the high- $T_c$   $\text{YBa}_2\text{Cu}_3\text{O}_{9.4}$
- 513 High-temperature oxygen defect equilibrium in superconducting oxide  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$
- 517 High resolution electron microscopy structure of  $\text{Ba}_2\text{YCu}_3\text{O}_7$  twin boundaries
- 521 Electronic structure calculations for oxocuprate clusters of the high- $T_c$  superconducting phases
- 527 High-field transitions in  $\text{URu}_2\text{Si}_2$  observed by magnetoresistivity and magnetization experiments
- 531 A possible reason of high  $T_c$  in oxide superconductor
- 535 Raman spectra of the high- $T_c$  superconductor  $\text{Y}-\text{Ba}-\text{Cu}-\text{O}$
- 537 Thermoelectric power in three  $\text{La}-\text{Ba}-\text{Cu}$  oxides
- General Papers (contd.)**
- E. Anastassakis and M. Cardona
- 543 Raman piezospectroscopic study of indium-hardened GaAs

- G. V. Sokolov, V. I. Arkhipov and A. I. Rudenko 549 The effect of disordered regions on semiconductor Joule heating
- E. A. Goremychkin, I. Natkaniec and F. Mühle 553 Inelastic magnetic neutron scattering from the heavy fermion system  $\text{CeAl}_3$
- W. Maciejewski and A. Duda 557 The Curie temperature of compositionally modulated magnetic films with interdiffusion zones
- P. Sathyasainath Prasad and S. Radhakrishna 561 Electronic transitions of nickel (II) ions in cadmium ammonium sulphate hexahydrate single crystals
- K. Kumazaki 567 Optical damping constant due to free carriers in narrow gap semiconductors
- K. Ishibashi, Y. Takagaki, K. Gamo, S. Namba, S. Ishida, K. Murase, Y. Aoyagi and M. Kawabe 573 Observation of Aharonov-Bohm magnetoresistance oscillations in selectively doped GaAs-AlGaAs submicron structures
- G. A. Toombs, F. W. Sheard, D. Neilson and L. J. Challis 577 Phonon emission by a hot two-dimensional electron gas in a quantizing magnetic field
- Byung-Gook Yoon and Choochun Lee 583 On the zero temperature statistics for the density of gap states of hydrogenated amorphous silicon
- E. Burzo, I. Creangă and M. Ursu 585 On the induced cobalt moment in  $\text{RCo}_2\text{B}$ -type compounds
- Shang-Fen Ren and R. E. Allen 589 Theory of defect complexes at semiconductor surfaces
- Lu Xiao-jia, Xie Lei-ming and Lei Xiao-ling 593 Electron density correlation of a superlattice with wave function overlaps
- Y. Iwasa, J. S. Lee and N. Miura 597 Free carrier effects on exciton spectra in *p*-type modulation-doped GaAs-AlGaAs quantum wells in high magnetic fields
- C. Jagadish, A. L. Dawar and P. C. Mathur 603 Donor action of indium and bismuth in  $\text{Pb}_{0.8}\text{Sn}_{0.2}\text{Te}$  thin films
- M. Munowitz and M. Mehring 605 Liouville space revisited: excitation and relaxation of multiple-quantum nuclear spin coherence in dipolar systems
- R. Brydson, B. G. Williams, W. Engel, H. Sauer, E. Zeitler and J. M. Thomas 609 Electron energy-loss spectroscopy (EELS) and the electronic structure of titanium dioxide
- G. Quirion, M. Poirier, M. Y. Ogawa and B. M. Hoffman 613 Microwave dielectric properties of  $\text{Cu}(\text{tatbp})\text{I}$
- Sang-Ok Yoon, Hyung-Jin Jung and Ki-Hyun Yoon 617 Contact resistance of the electrodes on semiconducting ceramics
- Chin-Ching Tzeng and Juh-Tzeng Lue 621 Optical second-harmonic generation of modulation doped  $\text{Ga}_{0.8}\text{Al}_{0.2}\text{As}$  film grown by molecular beam epitaxy
- P. J. Edwardson, V. Katkanant, J. R. Hardy and L. L. Boyer 625 *Ab initio* explanation of the incommensurate phase transition in  $\text{BaMnF}_4$
- i Vol. 64, Author Index 1-4
- ix Instructions for authors on the preparation of camera-ready manuscripts for *Solid State Communications*

## CONTENTS

## General Papers

- Zeng Xun-yi and Yu Xiang-you 631 A salute to Erwin Felix Bertaut
- M. Gueramian, A. Bezingé, K. Yvon and J. Muller 635 A Mössbauer spectroscopic study of 3d magnetism of  $R_2Fe_{14}B$
- R. Sanjinés, A. Aruchamy and F. Lévy 639 Synthesis and magnetic properties of ternary carbides  $R_2Fe_{14}C$  ( $R = Pr, Sm, Gd, Tb, Dy, Ho, Er, Tm, Lu$ ) with  $Nd_2Fe_{14}B$  structure type
- C. L. Ma and C. F. Schwerdtfeger 645 Metal-non metal transition in electrochromic sputtered iridium oxide films
- Yinsheng Tang, Desheng Jiang and Klaus Ploog 651 Ferromagnetic resonance studies of DC magnetron sputtered Co-Cr films
- Masami Kumagai, Toshihide Takagahara and Eiichi Hanamura 655 Influence of photo-modulation on reflectance of hetero NIPi superlattices
- C. Rincón 659 Electronic structure and optical properties of GaP/AIP (001) superlattices
- F. Jona and P. M. Marcus 663 On the order-disorder phase transition in ternary compounds
- H. Yasuhara and Y. Ousaka 667 Re-examination of the  $Fe\{001\}1 \times 1-O$  structure
- 673 Landau interaction function and effective mass of an electron liquid

## Superconductors and Superconductivity

- Zi-zhao Gan, Yuan-dong Dai and Ru-shan Han 679 A physical model for high  $T_c$  superconductivity of the oxygen deficient perovskite  $Y-Ba-Cu-O$
- Chen Zhaojia, Zhao Yong, Yang Hongshun, Chen Zuyao, Zheng Dongnin, Qian Yitai, Wu Baimei and Zhang Qirui 685 Specific heat anomaly of single phase  $YBa_2Cu_3O_{7-x}$  at superconducting transition temperature
- Fan Changxin, Sun Lin, Miao Bocai and Liu Jun 689 Observation of AC Josephson effect in  $Y-Ba-Cu-O$  devices at liquid nitrogen temperature
- Chin Lin, Guo Lu, Zun-Xiao Liu, Yun-Xi Sun, Jian Lan, Sun-Qi Feng, Chong-De Wei, Xing Zhu, Guo-Zhong Li, Zhao-Hui Shen, Zi-Zhao Gan, Feng-Xiang Chen, Jian-Wei Chen, Neng Li and Jing-Sheng Liu 691 Antiferromagnetic ordering observed in the high  $T_c$  superconductor  $GdBa_2Cu_3O_{7-x}$
- H. H. A. Smit, M. W. Dirken, R. C. Thiel and L. J. de Jongh 695  $^{155}Gd$  Mössbauer measurements on the ceramic superconductor  $GdBa_2Cu_3O_7$
- J. van den Berg, C. J. van der Beek, P. H. Kes, J. A. Mydosh, G. J. Nieuwenhuys and L. J. de Jongh 699 Superconductivity and 2-dimensional magnetism in orthorhombic and tetragonal  $GdBa_2Cu_3O_{7-x}$
- G. J. Kramer, H. B. Brom, J. van den Berg, P. H. Kes and D. J. W. IJdo 705  $^{89}Y$  NMR line splitting in the high  $T_c$  superconductor  $YBa_2Cu_3O_7$
- X. Obradors, A. Labarta, J. Tejada, F. García-Alvarado, E. Morán, M. Vallet, J. M. González-Calvet and M. A. Alario 707 Magnetic properties of  $Ba_2SmCu_3O_{9-x}$  high  $T_c$  superconductor

W. Ossau, E. Bangert and G. Weimann

J. F. Carolan, W. N. Hardy, R. Krahn,  
J. H. Brewer, R. C. Thompson and  
A. C. D. ChakladerS. Perkowitz, G. L. Carr, B. Lou, S. S. Yom,  
R. Sudharsanan and D. S. GinleyM. Cardona, L. Genzel, R. Liu, A. Wittlin,  
Hj. Mattausch, F. García-Alvarado and  
E. García-GonzálezT. Mori, P. Wang, K. Imaeda, T. Enoki and  
H. InokuchiHoydoo You, R. K. McMullan, J. D. Axe,  
D. E. Cox, J. Z. Liu, G. W. Crabtree and  
D. J. Lam

W. H. Li, C. H. Perry and J. B. Sokoloff

D. S. Burbidge, S. K. Dew, B. T. Sullivan,  
N. Fortier, R. R. Parsons, P. J. Mulhern,  
J. F. Carolan and A. ChakladerK. Yamada, E. Kudō, Y. Endoh, Y. Hidaka,  
M. Oda, M. Suzuki and T. MurakamiO. K. Antson, P. E. Hiismäki, H. O. Pöyry,  
A. T. Tiitta, K. M. Ullakko, V. A. Trunov  
and V. A. Ul'yanovN. T. Liang, K. H. Lii, Y. C. Chou,  
M. F. Tai and T. T. Chen

711 Radiative recombination of a 3D-electron with a 2D-hole in p-type GaAs/(GaAl)As heterojunctions

717 The superconducting glass transition in  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ 721 Phonon, plasmon and gap behavior in superconducting high- $T_c$   $\text{Y}_1\text{Ba}_2\text{Cu}_3\text{O}_7$  and  $\text{Gd}_{1.5}\text{Ba}_{1.5}\text{Cu}_3\text{O}_7$ 727 Infrared and Raman spectra of the  $\text{MBa}_2\text{Cu}_3\text{O}_7$ -type high- $T_c$  superconductors733 Structural and electrical properties of  $(\text{BEDT-TTF})_2\text{Hg}_2\text{Br}_{11}$ 739 A neutron diffraction study of a single crystal of  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ 743 Neutron studies of "forbidden" magnons in  $\text{Pt}_3\text{Mn}$ : a three-dimensional metallic ferromagnet749 DC magnetron sputtering of high  $T_c$  superconducting thin films753 The effect of the heat treatments on the antiferromagnetism in  $\text{La}_2\text{CuO}_{4-\delta}$  single crystals757 A high-resolution neutron powder diffraction study on high- $T_c$  superconductor  $\text{YBa}_2\text{Cu}_3\text{O}_7$ 

761 XPS studies of several high temperature superconductors: Y-Ba-Cu-O and La-Ba-Cu-O systems

**General Papers (contd.)**V. L. Berkovits, L. F. Ivantsov,  
I. V. Makarenko, T. A. Minashvili and  
V. I. Safarov

L. Forró, D. Schweitzer and H. Keller

A. Szász, J. Kojnok and E. Belin

B. Fernandez, F. Guillon and J. D. N. Cheeke

Y. Nakai, N. Kunitomi, M. Hagen,  
R. M. Nicklow and A. Onodera

767 Optical transitions on (1 1 0) surfaces of III-V compounds

771 The effect of disorder on the conduction electron spin resonance linewidth of the  $\alpha$  and  $\beta$  phases of  $(\text{BEDT-TTF})_2\text{I}$ 

775 Occupied electronic distributions of phosphorus in electroless deposited amorphous Ni-P alloys

779 Interpretation of ultrasonic attenuation in  $n$ -InSb at low temperatures

783 A study of the isochoric frequency shift of the phonons in Al and Cu

Yi-Chen Cheng	789 Enhancement of the sticking coefficient of $H_2$ chemisorption on a stepped Ni(1 0 0) surface
Ludmila Roa, A. B. Vincent and N. V. Joshi	793 A model for the 2.1 eV emission band in $Zn_{1-x}Mn_xS$
A. M. Gillet, Y. Luspín and G. Hauret	797 Brillouin scattering in $(NH_4)_2ZnCl_4$ above room temperature
Krishna B. Pandeya, Rajendra Singh, Chandra Prakash and J. S. Baijal	801 Effect of doping on the spin state of a <i>tris</i> (dithiocarbamate)iron(III) complex
D. C. Look	805 The donor nature of the main electron traps in electron-irradiated <i>n</i> -type GaAs
S. E. Acosta-Ortiz and A. Lastras-Martínez	809 Measurements of above-bandgap optical anisotropies in the (0 0 1) surface of GaAs
G. M. Mazzucchelli and R. Zeyher	813 Absence of pinning at finite temperatures in incommensurate solids with infinite-ranged interactions
Hyung-Gon Kim, In-Soen Min and Wha-Tek Kim	819 Phase transition temperature of the $\alpha$ - $In_2Se_3$ single crystal
A. Gold	823 On the importance of the ladder diagrams for the Anderson localization problem
D. J. Wyble, M. Seel and J. T. Waber	827 Hartree-Fock calculations of crystalline packing of small linear <i>n</i> -alkanes
A. H. M. Shousha	831 The potential barrier height of amorphous MIS tunnel diodes
Tsuyoshi Uda	837 Atomic structure of amorphous silicon
J. R. Chelikowsky and R. Redwing	843 A semi-empirical total energy method for elemental clusters and solids: application to the structural properties of silicon clusters
J. A. Hodges and J. B. Marimon da Cunha	847 Europium charge states in sputtered amorphous $EuPd_x$ ( $x = 2.4$ and $3.0$ )
	i Instructions for authors on the preparation of camera-ready manuscripts for <i>Solid State Communications</i>
	iii Calendar of Solid State Events

NOVEMBER

VOLUME 64, NUMBER 6

1987

## CONTENTS

## General Papers

C. A. Dimitriadis	851 Transient photoconductivity analysis near a grain boundary of polycrystalline semiconductors
Bogdan M. Anghelov	855 Energy levels and intensity parameters of $LiHoP_4O_{12}$
F. G. Gandra, M. J. Pontes, S. Schultz and S. B. Oseroff	859 ESR of $Er^{3+}$ , $Gd^{3+}$ , $Yb^{3+}$ and $Dy^{3+}$ in the heavy-fermion compounds $UPt_3$ and $UBe_{13}$
Hélio Chacham, J. L. A. Alves and M. L. De Siqueira	863 Alkali atoms as acceptor impurities in ZnSe
E. Richter and D. Strauch	867 Lattice dynamics of GaAs/AlAs superlattices



## Superconductors and Superconductivity

L. Degiorgi, E. Kaldis and P. Wachter

Yu Daoqi, Fang Rongchuan, Zhang Qirui, Zhao Yong, He Zhenhui, Zhang Minjian, Xu Cuenyi, Zhang Han, Chen Zuyao and Qian Yitai

X. Z. Wang, M. Henry, J. Livage and I. Rosenman

Zhao Yong, Zhang Qirui, Kuan Weiyan, Xia Jansheng, He Zhenhui, Sun Shifang, Chen Zuyao, Qian Yitai and Pan Guoqiang

C. V. Tomy, A. M. Umarji, D. T. Adroja, S. K. Malik, Ram Prasad, N. C. Soni, Ashok Mohan and C. K. Gupta

Ji-hai Xu

E. W. Fenton

E. R. Gagliano, A. G. Rojo, C. A. Balseiro and B. Alascio

F. Marsiglio, R. Akis and J. P. Carbotte

C. Taliani, R. Zamboni and F. Licci

J. B. Sokoloff

H. Fjellvåg, P. Karen, A. Kjekshus and J. K. Grepstad

873 The optical gap of the superconductor  $\text{La}_{1.85}\text{Sr}_{0.15}\text{CuO}_4$ 

877 Raman spectrum of Ba-Y-Cu-O system

881 The oxalate route to superconducting  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ 885 Hall effect in single phase  $\text{Ba}_2\text{YCu}_3\text{O}_{7-\delta}$ 889 Superconductivity in  $\text{YBa}_2(\text{Cu}_{1-x}\text{Ag}_x)\text{O}_{7-\delta}$  oxide system893 Upper critical field of high  $T_c$  superconductors

897 Superconductivity in heavy-fermion systems

901 Correlation effects in the electronic structure of high  $T_c$  superconductors905 Combined phonon-exciton mechanism in  $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$ 911 Bulk phonon modes of  $\text{YBa}_2\text{Cu}_3\text{O}_7$  from infrared absorption at 300-30K915 Applicability of the strong interaction Hubbard model to high  $T_c$  superconductors917 X-ray photoelectron spectroscopy study of  $\text{Y}_2\text{BaCuO}_5$  and  $\text{YBa}_2\text{Cu}_3\text{O}_{9-\delta}$ 

## General Papers (contd.)

C. A. M. da Silva, F. P. Livi and A. A. Gomes 925 X-ray diffractometric study of the phase stability in the pseudo-binary compounds  $\text{Hf}(\text{Fe}_{1-x}\text{Si}_x)_2$  and  $\text{Zr}(\text{Fe}_{1-x}\text{Si}_x)_2$ V. K. Jain, V. S. Yadav and Jitender Singh 929 Host-spin lattice relaxation narrowing in  $\text{Rb}_2\text{Co}(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O}$ :  $\text{Mn}^{2+}$  single crystals

P. Masri 933 Theoretical contribution to the lattice dynamics of gallium antimonide (110) surface

J. N. Daou, P. Vajda and J. P. Burger 937  $\alpha$ - $\text{HoH}(\text{D})_2$ : a new hydrogen-rare earth solid-solution system at low temperatures

I. Pelant, V. Kohlová, J. Hála, M. Ambrož and K. Vacek 939 Direct-indirect gap intervalley scattering of electrons in TlBr electron-hole plasma

Noriyuki Hatakenaka and Susumu Kurihara 943 Resonant tunneling phenomena in ultrasmall Josephson junctions

Yuhei Mori and Susumu Kurihara 947 Chain length dependence of localized vibrational modes around a soliton in *trans*-polyacetyleneI. Abdulhalim and R. Beserman 951 Raman scattering study of laser induced structural transformations in glassy  $\text{As}_2\text{Se}_3$

- H. Pykacz and Z. Czaplá
- F. Combet Farnoux and A. P. Hitchcock
- E. R. Hodgson and F. Agulló-López
- I. Schneider
- F. Cussó, F. Jaque and P. Aceituno
- K. D. Usadel and B. Schmitz
- R. Lassnig and W. Boxleitner
- M. Babiker
- E. M. Zub and S. V. Sukhvalo
- S. Pal Choudhuri and G. K. Bichile
- J. Kirschner and S. Suga
- 957 On the kinetics of polymorphic transitions in highly deuterated  $\text{NH}_4\text{HSeO}_4$  crystals
- 961 On the relative contributions of *ss* and *ed* final states to  $M_{23}$  ionization of 3d transition metals
- 965 Oxygen vacancy centres induced by electron irradiation in  $\text{LiNbO}_3$
- 969  $\text{F}_2^-$  centers in LiF
- 971 Dynamical Jahn–Teller effect in  $\text{Pb}^{2+}$  doped alkali halides
- 975 Quantum fluctuations in an Ising spin glass with transverse field
- 979 Tunneling from quasi two-dimensional space charge layers
- 983 Helicons in superlattice plasmas of finite layer thickness
- 989 Valence state of Fe, Cu, Cr ions in films of the  $\text{Cu}_x\text{Fe}_{1-x}\text{Cr}_2\text{S}_4$  solid solutions
- 993 The electrical conductivity and dielectric behaviour of polycrystalline calcium fluoride
- 997 Spin polarization vector analysis of secondary electrons from ferromagnetic Fe excited by spin-polarized primary electrons
- i Erratum
- iii Instructions for authors on the preparation of camera-ready manuscripts for *Solid State Communications*

NOVEMBER

VOLUME 64, NUMBER 7

1987

## CONTENTS

## General Papers

- W. Kleemann, F. J. Schäfer and A. S. Chaves
- S. B. Liao and S. M. Bhagat
- H. Ebert, H. Winter, B. Gyorffy, D. D. Johnson and F. J. Pinski
- A. T. Pedziwiatr and W. E. Wallace
- J. E. Griffiths and G. P. Espinosa
- L. S. Selwyn, W. R. McKinnon and J. R. Dahn
- A. Alexandrou and M. Cardona
- 1001 Crystal optical studies of the phase transitions in  $\text{KLiSO}_4$
- 1005 Elementary excitations in reentrant magnets and concentrated spin glasses
- 1011 Theoretical study of the environmental effects on the hyperfine fields of Ni and Fe in  $\text{Ni}_{0.75}\text{Fe}_{0.25}$
- 1017 Spin phase diagrams for  $\text{R}_2\text{Fe}_{14-x}\text{Co}_x\text{B}$  systems ( $\text{R} = \text{Y}, \text{Gd}, \text{Pr}, \text{Nd}, \text{Tb}, \text{Er}, \text{Tm}$ )
- 1021 Local structure and phase separation in  $\text{Ge}_{1-x}\text{Sn}_x\text{Se}_{2.5}$  photoactive glasses
- 1025 Lack of oxygen substitution in the Chevrel compound  $\text{Mo}_6\text{S}_8$
- 1029 Triply resonant second-order Raman scattering in GaAs

**Superconductors and Superconductivity**

- J. Y. Henry, P. Burlet, A. Bourret, G. Rault, P. Bacher, M. J. G. M. Jurgens and J. Rossat-Mignod 1037 Electron microscopy and neutron diffraction studies of  $\text{Ba}_2\text{YCu}_3\text{O}_{7-\delta}$  compounds
- J. H. Castilho, P. A. Venegas, G. E. Barberis, C. Rettori, R. F. Jardim, S. Gama, D. Davidov and I. Felner 1043 Evidence for dynamic effects in the ESR spectra of the high  $T_c$  superconductor  $\text{YBa}_2\text{Cu}_3\text{O}_7$
- Yosuke Saito, Hideaki Sawada, Toshiaki Iwazumi, Yoshihito Abe, Hiroshi Ikeda and Ryozi Yoshizaki 1047 Infrared properties of the oxygen-deficient triperovskite  $\text{YBa}_2\text{Cu}_3\text{O}_7$  compound
- B. Roden, E. Braun and A. Freimuth 1051 On the antiferromagnetism of CuO at 230K and its relevance for high  $T_c$  superconductivity
- Wei-ming Que and G. Kirczenow 1053 Antiferromagnetic superexchange and superconductivity in ceramic oxides
- G. Wortmann, C. T. Simmons and G. Kaindl 1057 Mössbauer study of the magnetic high- $T_c$  superconductor  $\text{GdBa}_2\text{Cu}_3\text{O}_{7-\delta}$
- E. G. Derouane, Z. Gabelica, J.-L. Brédas, J.-M. André, Ph. Lambin, A. A. Lucas and J.-P. Vigneron 1061 Relationship between oxygen stoichiometry and crystal structure in  $\text{YBa}_2\text{Cu}_3\text{O}_{6.5+x}$  precursors to high- $T_c$  superconducting materials
- B. Mettout, D. Limagne, G. Waysand, E. Carpitella, A. de Bellefon and P. Espigat 1069 Diamagnetic contact in superheated superconducting suspension of microspheres
- M. Gulácsi and Zs. Gulácsi 1075 Charge density waves in heavy fermion systems

**General Papers (contd.)**

- Y. Liu and R. Sooryakumar 1081 Discrete coupled plasmon-phonon modes in finite semiconductor multi-layers
- K. M. Reddy, L. Rama Moorthy and B. J. Reddy 1085 Electronic and vibrational absorption spectra in falcondoite
- Nguyen Vinh Quang 1089 The s-splitting and shifts of the bands of Wurtzite structure semiconductors under circularly polarized laser irradiation
- i Instructions for authors on the preparation of camera-ready manuscripts for *Solid State Communications*

NOVEMBER

VOLUME 64, NUMBER 8

1987

**CONTENTS****General Papers**

- L. Puech 1095 Polarized  $^3\text{He}$  and  $\text{CeRu}_2\text{Si}_2$ : comparison of their magneto-elastic properties
- I. Ruiz-Larrea, A. López-Echarri and M. J. Tello 1099 Phase transition sequence in  $\text{N}(\text{CH}_3)_4\text{FeCl}_4$
- T. K. Sham 1103 X-ray absorption studies of unoccupied d-band states in gold and nickel metallic compounds

- P. Löbl, M. Esguerra, F. Küß, E. Lüscher, G. Fritsch, M. von Allmen, U. Kambli and A. Schulte 1107 Electrical conductivity and Hall effect of laser quenched amorphous  $\text{Pt}_{1-x}\text{Si}_x$  alloys near the metal insulator transition
- D. Fonteyn and G. Pitsi 1113 SDR of copper plastically deformed by torsion at 4.2 K
- A. M. Simpson, A. Caillé and M. H. Jericho 1117 Elastic and thermal properties of  $\text{CsNiF}_3$
- F. Fabre, B. Salanon and J. Lapujoulade 1125 Roughness of Cu (1,1,1) : a very anisotropic face
- Q. Li, C. Y. Li, K. Wu and D. Yin 1133  $\text{LaBa}_2\text{Cu}_3\text{O}_{7-y}$  with zero resistivity at 79 K

#### Superconductors and Superconductivity

- Z. Gabelica, G. Demortier, G. Deconinck, F. Bodart, A. A. Lucas, M. Renier, Ph. Lambin, J. P. Vigneron and E. G. Derouane 1137 Synthesis parameters affecting the bulk composition and superconducting properties of  $\text{YBaCuO}$ -based compounds
- E. Salomons, N. Koeman, R. Brouwer, D. G. de Groot and R. Griessen 1141 Pressure-composition isotherms and lattice dilation of  $\text{YBa}_2\text{Cu}_3\text{O}_x$
- B. K. Chakraverty, D. Feinberg, Z. Hang and M. Avignon 1147 Squeezed bipolaronic states and high temperature superconductivity in  $\text{BaLaCuO}$  systems
- S. Ewert, S. Guo, P. Lemmens, F. Stellmach, J. Wynants, G. Arlt, D. Bonnenberg, H. Kliem, A. Comberg and H. Passing 1153 Ultrasonic investigations on superconducting  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$  samples of different microstructure
- K. Yamaji 1157 One-dimensional two-band model of superconductivity

#### General Papers (contd.)

- Liang Chen and Tsung-han Lin 1163 The effect of crystal field splitting on a dilute mixed valence Tm system
- Lu Wei, Ye Hongguan, Yu Zhiyi, Zhang Suying, Fu Ying, Xu Wenlan and Shen Xuechu 1167 Far-infrared quasi-local modes of ZnTe in CdTe
- S. D. Kouimtzi 1171 Evidence of a radiation-induced defect level in *n*-type InSb
- M. C. F. L. Lara and A. C. Nunes 1175 Ground state of a uranium impurity in a metal: inclusion of self-energy terms
- R. Contini and J. M. Layet 1179 Dispersion study of the  $\text{Ag}(111)$  surface plasmon (SP) by means of high resolution electron energy loss spectroscopy (HREELS)
- J. T. Lopez Navarrete and G. Zerbi 1183 On the problem of  $\pi$  electron delocalisation across  $sp^1$  carbon atoms introduced as defects in polyacetylene
- A. Borghesi, G. Guizzetti, L. Nosenzo, T. Prosperi and S. Viticoli 1187 Optical absorption of Co(II) ion in  $\text{Co}_x\text{Zn}_{1-x}\text{In}_2\text{S}_4$  ( $0.07 \leq x \leq 0.46$ ) solid solution

i Errata

iii Author Index Nos 1-8

## CONTENTS

**General Papers**

- M. Ghedini, S. Armentano, R. Bartolino, G. Torquati and F. Rustichelli 1191 X-ray diffractometric study on a Schiff base copper (II) complex with mesomorphic properties
- K. Kaneto, F. Uesugi and K. Yoshino 1195 Photoinduced absorption in doped poly (3-methylthiophene) films

**Superconductors and Superconductivity**

- M. W. Dirken and L. J. de Jongh 1201 Magnetic specific heat of  $Dy^{3+}$  in  $DyBa_2Cu_3O_{7-\delta}$  compared to the 2-d,  $S = \frac{1}{2}$  Ising model prediction
- J.-M. Mariot, V. Barnole, C. F. Hague, V. Geiser and H.-J. Güntherodt 1203 Experimental Cu 3d electronic structure in high- $T_c$   $La_{1.85}Ba_{0.12}CuO_{4-x}$  and  $YBa_2Cu_3O_{8-x}$  superconductors
- J. A. Hodges, P. Imbert and G. Jéhanno 1209 Magnetic ordering on  $Yb^{3+}$  in  $YbBa_2Cu_3O_{7-x}$
- H. Verweij 1213 Defect chemistry of  $YBa_2Cu_3O_x$ : strong evidence for the presence of  $Cu^+$
- J. Hauck 1217 Bonding and physical properties of  $Ba_2GdCu_3O_{6.5+x}$  compared to other oxides
- Z. Gabelica, E. G. Derouane, J. P. Vigneron, Ph. Lambin, M. Renier, A. A. Lucas, G. Deconninck, F. Bodart and G. Demortier 1221 Oxygen stoichiometry of  $YBa_2Cu_3O_{6.5+x}$  superconducting phase formed and stabilized under various atmospheres: a TG-DTA-DTG study
- M. Onoda, K. Fukuda, M. Sera and M. Sato 1225 Superconducting phase in  $La_{3-x}Ba_{3+x}Cu_6O_y$  system
- S. Blumenröder, E. Zirngiebl, H. Schmidt, G. Güntherodt and H. Breiten 1229 Raman spectroscopy as a function of the oxygen content in  $YBa_2Cu_3O_{7-x}$

**General Papers (contd.)**

- J. C. Maurya, A. V. Dixit, V. Manorama and S. V. Bhoraskar 1235 Effect of reduction of PLZT on carrier lifetime determined by EBIC
- Partha Pratim Basu, C. K. Sarkar and D. Chattopadhyay 1241 Electric field dependence of the hot-electron drift velocity in  $Hg_{0.8}Cd_{0.2}Te$  under magnetic quantisation at low temperatures
- J. P. Fillard, A. Baroudi, P. Gall, J. Bonnafe, P. N. Favennec and R. Coquille 1243 Observation of cellular structures of defects in semi-insulating InP-Fe
- P. Deppe, M. Rosenberg and K. H. J. Buschow 1247 A Mössbauer spectroscopy study of  $Nd_2Fe_2B_8$

i Instructions for authors on the preparation of camera-ready manuscripts for *Solid State Communications*

## CONTENTS

**General Papers**

- H. Lettenmayr, W. Jantsch and L. Palmethofer 1253 Temperature induced clustering of Mn in  $Pb_{1-x}Mn_xTe$



- G. Hennico, J. Delhalle, J-M. André, M. Seel and J. Ladik 1257 Density of electronic states of regular and disordered model chains of acetylene-carbon monoxide copolymers
- S. Nonomura, S. Hattori and S. Nitta 1261 Photoluminescence of quasi-one dimensional amorphous  $\text{Si}_{1-x}\text{C}_x\text{:H}$  prepared by the glow discharge method

#### Superconductors and Superconductivity

- J. Prade, A. D. Kulkarni, F. W. de Wette, W. Kress, M. Cardona, R. Reiger and U. Schröder 1267 Lattice dynamics of the high- $T_c$  superconductor  $\text{La}_{2-x}\text{M}_x\text{CuO}_4$
- U. Venkateswaran, K. Strössner, K. Syassen, G. Burns and M. W. Shafer 1273 Pressure dependence of the Raman modes in  $\text{Sr}_2\text{TiO}_4$
- K. Kajita, Y. Nishio, S. Moriyama, W. Sasaki, R. Kato, H. Kobayashi and A. Kobayashi 1279 New organic superconductors  $\kappa$ - and  $\theta$ -(BEDT-TTF) $_2\text{I}_3$ : transport property
- Z. Henkie, R. Horyń, Z. Bukowski, P. J. Markowski and J. Klamut 1285 Normal state thermopower of the high temperature superconductor  $\text{YBa}_2\text{Cu}_3\text{O}_{6.5+\delta}$
- B. W. Ricketts, R. B. Roberts, R. Driver and H. K. Welsh 1287 Hall effect measurements on a bulk  $\text{YBa}_2\text{Cu}_3\text{O}_x$  sample
- J. M. Ghez, Yin Yu Wang, R. Rammal, B. Pannetier and J. Bellissard 1291 Band spectrum for an electron on a Sierpinski gasket in a magnetic field

#### General Papers (contd.)

- H. Navarro, J. Griffin, E. E. Haller and R. E. McMurray, Jr. 1297 Experimental study of three ground state components of the hydrogen-oxygen donor in germanium
- R. Mickevičius and A. Reklaitis 1305 Monte Carlo study of nonequilibrium phonon effects in GaAs
- B. Pal, S. S. Manna and B. K. Chakrabarti 1309 Structural instabilities of DLA-like fractals at finite temperatures
- A. Bianconi, R. Del Sole, A. Selloni, P. Chiaradia, M. Fanfoni and I. Davoli 1313 Partial density of unoccupied states and  $\text{L}_{2,3}$ -X-ray absorption spectrum of bulk silicon and of the  $\text{Si}(111)2 \times 1$  surface
- I. Aviani, Z. Vučić, M. Horvatić and J. Gladić 1317 Concentration and temperature dependence of the thermal expansion coefficient in the superionic phase of  $\text{Cu}_{2-x}\text{Se}$
- A. Ferraz, F. A. Oliveira and M. A. Amato 1321 Dielectric screening, exciton binding energy and the insulator-metal transition in molecular hydrogen
- U. Kunze 1325 Tunneling spectroscopy of surface and bulk Landau levels in  $\text{Si}(001)$  electron accumulation layers
- K. Aoki, Y. Kakudate, M. Yoshida, S. Usuba, K. Tanaka and S. Fujiwara 1329 Raman scattering observations of phase transitions and polymerizations in acetylene at high pressure

DECEMBER

VOLUME 64, NUMBER 11

1987

#### CONTENTS

#### General Papers

- Y. Teraoka 1333 The order-disorder transition of the FCC alloy with the (100) surface

J. A. Bell, W. R. Bennett, R. Zanon,  
G. I. Stegeman, C. M. Falco and C. T. Seaton

1339 Elastic constants of Cu/Nb superlattices

M. Wintenberger and Y. Allain

1343 Structure magnetique helicoidale de  $\text{CuCrS}_2$

#### Superconductors and Superconductivity

J. L. Hodeau, C. Chaillout, J. J. Capponi  
and M. Marezio

1349 Twinning in  $\text{Ba}_2\text{YCu}_3\text{O}_{6+x}$  single crystals

R. J. De Angelis, J. W. Brill, M. Chung,  
W. D. Arnett, X.-D. Xiang, G. Minton,  
L. A. Rice and C. E. Hamrin, Jr.

1353 Studies of the superconducting oxides  $\text{Nd}_x\text{Y}_{1-x}\text{Ba}_2\text{Cu}_3\text{O}_y$

K. H. Bennemann, M. Kulić and P. Stampfli

1359 Superconductivity and nonuniform magnetic order in itinerant ferromagnets

C. Geantet, J. Padiou, O. Peña, M. Sergent  
and R. Horyn

1363 Evidence of superconductivity in  $\text{Ca}_x^{2+}\text{Mo}_6\text{S}_8$  single crystals at normal pressure

#### General Papers (contd.)

W. Ekardt, J. Kühn, D. Lehmann and  
P. Ziesche

1371 How to make best computational use of rigorous theorems connecting total energy and electrostatic potentials at surfaces of small metal particles

A. Simunek and G. Wiech

1375  $\sigma$  - and  $\pi$  - bands of potassium-intercalated graphite  $\text{C}_6\text{K}$  studied by angle-resolved X-ray emission spectroscopy (ARXES)

D. Laplaze, I. Youm, G. W. Cohen-Solal and  
M. Cadene

1379 Spectral response of  $(\text{CH}_3)_x\text{-CdZnS}$  heterojunction: application of Onsager's theory of geminate recombination

J. S. Nkoma

1383 Phonon polariton modes in semiconductor superlattices

R. R. Mishra and R. M. Singru

1387 Density functional calculation of Compton profiles of metals using phase-space approach

D. Bingham and J. B. Dunlop

1389 The effect of surface cracks and irregularities on reverse domain nucleation in  $\text{Nd}_2\text{Fe}_{14}\text{B}$

J. W. Sakai and O.A.C. Nunes

1393 LO-phonon instability due to indirect interband absorption of a laser field in semiconductors

J. R. Senna and S. Das Sarma

1397 Energy loss rate of electrons in quantum wells

M. S. Kushwaha and P. Halevi

1405 Splitting of surface polariton dispersion curves due to resonance with magnetoplasma transition layer

N. P. Lalla, A. K. Singh, R. S. Tiwari and  
O. N. Srivastava

1409 On the curious electrical resistivity behaviour of  $\text{Al}_{86}\text{Mn}_{14}$  quasicrystalline phase

DECEMBER

VOLUME 64, NUMBER 12

1987

#### CONTENTS

#### General Papers

D. Sieger, H. Tietze, R. Geick, P. Schweiss,  
W. Treutmann and P. Frings

1413 Magnetic excitations, cluster modes and disorder phenomena in  $\text{Rb}_2\text{Mn}_x\text{Cr}_{1-x}\text{Cl}_4$

H. P. Schölch, M. Weiser, S. Kalbitzer and  
G. Müller

1419 Effective charge of Li in a-Si:H by transport measurements

**Superconductors and Superconductivity**

- Ji-hai Xu 1425 Theory of far-infrared absorption and electron tunneling in high  $T_c$  superconductors
- S. R. Dharwadkar, V. S. Jakkal, J. V. Yakhmi, I. K. Gopalakrishnan and R. M. Iyer 1429 X-ray diffraction coupled thermogravimetric investigations of  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$
- F. E. Bates and J. E. Eldridge 1435 Normal-coordinate calculation of the zero-wavevector vibrations of  $\text{YBa}_2\text{Cu}_3\text{O}_7$
- P. K. Davies, J. A. Stuart, D. White, C. Lee, P. M. Chaikin, M. J. Naughton, R. C. Yu and R. L. Ehrenkauser 1441 Fluorination of superconducting  $\text{Ba}_2\text{YCu}_3\text{O}_{9-d}$
- I. T. Belash, A. D. Bronnikov, O. V. Zharikov and A. V. Palnichenko 1445 On the superconductivity of graphite intercalation compounds with sodium

**General Papers (contd.)**

- U. Behn and G. Gobsch 1451 Observation of room-temperature exciton quenching in GaAs/AlGaAs superlattices by electoreflectance
- P. S. Cheng and J. J. Markham 1455 Symmetry properties of the macroscopic scalar potential
- K. Winer and M. Cardona 1461 Two-phonon frequency difference absorption in Si and Ge
- E. Depaetere, D. Vignaud and J. L. Farvacque 1465 Observation of 1.13 eV polarized luminescence band in plastically deformed GaAs
- Jun Takeda and Takenari Goto 1469 Study of the Urbach rule from the exciton luminescence yield in red-HgI<sub>2</sub>
- E. A. Goremychkin, I. Natkaniec, E. Mühle, H. Müller and P. Frach 1473 Measurements of inelastic neutron scattering and specific heat capacity of CeCu<sub>3</sub>
- A. Kotani, K. Okada and M. Okada 1479 Theory of 3d-XPS and L<sub>2,3</sub>-XAS in CeF<sub>3</sub>
- G. Mukhopadhyay 1483 On the dynamic local field factor of a uniform electron liquid
- J. J. van Kooten, E. G. Sieverts and C. A. J. Ammerlaan 1489 Electron paramagnetic resonance of an Fe-Fe pair in silicon
- 1495 Vol. 64, Author Index 1-12